TEXTILE TECHNOLOGY DIGEST

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Abstracts

ORGANIC FIBERS I

Fiber elasticity. Elasticity of textile fibers. J. K. Berry. *Fibres 7,* 311-15 (Nov. 1946).

The ASTM definition of elasticity is discussed, being considered generally acceptable. Three methods of measuring elasticity are outlined and generally discussed: (1) tensile, (2) compression, and (3) torsional and flexual elasticity. The lack of knowledge of the elastic behavior of textiles under service conditions is briefly considered. TTD: 3-47

CONTRIBUTION TO PHYSICS OF CELLULOSE FIBERS; STUDY IN SORPTION, DENSITY, REFRACTIVE POWER AND ORIENTATION. P. H. Hermans. Elsevier Publishing Co., New York, N. Y.; 1946; 224 pp.

Reviewed in *Bull. Inst. Paper Chemistry 17,* 213-14 (Dec. 1946). TTD: 3-47

Vegetable fibers I 1

Cotton ginning laboratory. Stoneville, U. S. A. Ivan J. Campbell. *Cotton & Cotton Oil Press 47,* No. 23, 7-9, 12-13, 16 (Nov. 16, 1946).

The activities of the U. S. Cotton Ginning Laboratory are outlined and discussed briefly. TTD: 3-47

Flax retting. Recent developments in the microbiology of retting. I—Microbial flora in different systems of retting; II—Part played by bacteria in retting flax and in purifying liquor. L. A. Allen. *J. Soc. Chem. Industry 65,* 365-70, 373-6 (Nov., Dec. 1946).

From investigations of different processes of flax retting it was found that large numbers of coliform bacteria, streptococci, and spore-forming anaerobes were consistently present. Continuous aeration of the retting liquor encouraged bacterial growth, enabling the liquor to be reused for retting subsequent batches of flax. Fourteen tables. TTD: 3-47

Flax retting. Recent developments in retting of flax and disposal of waste waters. T. W. Brandon & C. B. Taylor. *J. Soc. Chem. Industry 65,* 390-6 (Dec. 1946).

A recently developed process of aerated retting, in which no discharge of waste waters normally occurs, is briefly reviewed in comparison with several other methods tested. Because of insufficient evidence relative costs of aerated and of anaerobic retting have not been made. The aerated ret requires much less water than the anaerobic, but requires more electricity. TTD: 3-47

Henequen fiber. Quality control in henequen production. Walter J. Armstrong, Armour Research Foundation. *Cord Age Mag. 47,* No. 1, 22, 24 (Jan. 1947).

From a year's study of the industry in Yucatan it is concluded that control measures should embrace plant selection, cultivation, harvesting, grading of leaves, decortication, drying, cleaning, inspecting, and baling. TTD: 3-47

Yawa fiber. Yawa. Anon. *Fibres 7,* 328 (Nov. 1946).

The cultivation of Yawa (principally in Nigeria), along with a fiber analysis, is briefly noted. Fiber preparation is by hand-stripping instead of by retting; it is used in ropes, twines, and, more particularly, fishing nets. TTD: 3-47

BAST FIBER TEXTILE MACHINERY IN GERMANY. Brit Intelligence Objectives Subcommittee, Report No. 738; price 1s 7d. TTD: 3-47

INDIAN COTTON TEXTILE INDUSTRY (1945-46 ANNUAL). Anon. Gandhi & Co., Bombay, India; price Rs. 5.

Reviewed in *Indian Textile J. 57,* 99 (Oct. 1946). TTD: 3-47

Animal fibers I 2

Silk-worm diseases. Silk-worm diseases: their root cause and preventive measures. V. M. Appadhorai Mudaliar, Kollegal Silk Filature. *Indian Textile J. 57,* 57-63 (Oct. 1946).

Publications on this subject are largely in Italian, French, and Japanese. Five diseases to which silk worms are subject are discussed as to symptoms and remedial measures: (1) flacherie, (2) macilenza (another form of flacherie, with different symptoms), (3) pebrine, (4) grassarie, and (5) muscardine. TTD: 3-47

Wool. Wool standards. T. B. Hayward, Philadelphia Wool & Textile Assn. *Cotton 110,* No. 11, 64-5, 160 (Nov. 1946).

The characteristics of wool fiber are reviewed, it being noted that in Australia alone there are over 2000 types of wools. Common practice with cotton manufacturers running blends is to purchase tops; manufacturers having long-draft systems have more latitude in their choice of wool for blending. TTD: 3-47

INVESTIGATION OF WOOL BY ELECTRON MICROSCOPE. Bertil Alofsson. Proc. of the Swedish Inst. for Textile Research, Gothenburg, Sweden; 1946; 14 pp. TTD: 3-47

WORSTED SPINNING INDUSTRY IN BRITISH AND U. S. ZONES OF GERMANY. Brit. Intelligence Objectives Subcommittee, Report No. 627; price 6s 8d. TTD: 3-47

Rayons I 3 a

Rayon. Synthetic fibers discussed at cotton convention. Anon. *Am. Wool Cotton Reptr. 60,* No. 42, 19, 21, 23, 25 (Oct. 17, 1946).

Addresses (by H. Wickliffe Rose on "Cellulose Synthetics" and by Walter J. Hamberger on "What Do Noncellulosic Synthetics Offer Textile Industry") reviewing developments in artificial and synthetic fibers, are briefly summarized. TTD: 3-47

Viscose rayon. Viscose rayon finds new uses. Anon. *Chem. Eng. News 24,* 3222-3 (Dec. 10, 1946).

The use of rayon staple as a carrying fiber in asbestos roving, yarns, and fabrics is briefly noted. TTD: 3-47

Delustered viscose rayon. Francis B. Cramer (to E. I. du Pont de Nemours & Co.). USP 2 412 969, Dec. 24, 1946.

A delustered effect is produced in regenerated cellulose filaments and yarns, particularly viscose rayon, by extruding the filaments or yarns, containing 1-5 wt.% quaternary ammonium hydroxide, into a spinning bath having a fast coagulating action and substantially no regenerating action. After coagulating the yarn is stretched at least 25% over the spun length and then regenerated in a relaxed condition to permit a tension-free shrinkage. TTD: 3-47

Rayon. Wm. F. Underwood (to E. I. du Pont de Nemours & Co.). USP 2 413 123, Dec. 24, 1946.

Permanently crimped, high tenacity rayon, having a low elongation, a low spontaneous elongation in water, and a low secondary swelling in water, is produced by extruding viscose filaments into a spinning bath (pH 5-6.5) at a high ratio of jet-velocity: drawoff (at least 4: 1). The coagulated filaments are stretched at least 150% of their original straight length, then regenerated and dried free from tension. TTD: 3-47

Reel. Lorin A. Corey (to Industrial Rayon Corp.). USP 2 413 217, Dec. 24, 1946.

In viscose rayon production by the continuous process an improved cantilever reel, preferably made of aluminum or other light material, through which a heated liquid (hot water) is circulated, promotes the rapid, even drying of the freshly spun yarn. TTD: 3-47

Cellulose acetate cakes. F. B. Hill & E. T. Hitchin (to Brit. Celanese, Ltd.). Brit. P. 577 604. *Textile Mfr. 72,* 551 (Oct. 1946).

Softened acetate yarn, after stretching, is forwarded by a pair of intermeshing swifts to a Topham box collecting device for winding in cakes. TTD: 3-47

Rayon spinning bucket. L. C. Goodwin & C. Tinsley (to Harben's, Ltd.). Brit. P. 577 668. *Textile Mfr. 72,* 552 (Oct. 1946).

An improved motor drive for a rayon spinning bucket keeps air currents from the bucket so that no liquid gets on the frame or motor unit. TTD: 3-47

Colored actate filaments. Brit. Celanese, Ltd. Brit. P. 577 718. *Textile Mfr. 72,* 552 (Oct. 1946).

High tenacity (at least 2.5 g/denier) filaments of cellulose acetate, containing a colored pigment, particularly black, may be saponified to obtain regenerated cellulose filaments similarly colored. In an example, C black is added to a spinning solution containing 25 wt.% cellulose acetate in 95% acetone solvent, and the colored spinning solution is dry-spun into 480 denier 40 filament yarn, which is stretched and steamed at 135°C and then wound on bobbins. After saponifying in a bath containing 0.6% NaOH and 10% sodium acetate the yarn is washed and dried. TTD: 3-47

Protein fibers I 3 b

Alginate carrier yarns. Soluble carrier yarn method is commercialized for featherweight wool fabric. Anon. *Fibres 7,* 327 (Nov. 1946).

The use of alginate carrier yarns, which may be washed out after weaving, to make a super-lightweight wool fabric, is briefly noted. TTD: 3-47

Alginic acid. Orkney seaweed. Anon. *Ambassador 1946,* No. 12, 130.

The Orkney Islands are estimated to yield over 8000 tons of dried seaweed (having as an important constituent alginic acid) a year. TTD: 3-47

Casein bristles. Casein for brush bristles. Anon. *Chem. Eng. 54,* No. 3, 108-9 (Mar. 1947).

Casein has been successfully developed for use as bristles

in paint brushes, casein solution being first spun and then tanned in a quinone solution.
LCL TTD: 3-47

Protein fibers. Oskar Huppert. USP 2 413 501, Dec. 31, 1946.

Protein fibers may be prepared either from an ammonia alkaline-aqueous solution (in which such a protein as casein, soybean, peanut protein, etc., is used) or from an alcoholic-aqueous solution (in which such a protein as zein, gliadin or the like is used). TTD: 3-47

ON THE STRUCTURE OF THE PROTEIN MOLECULE. A CHEMICAL INVESTIGATION. N. Troensegaard. G. E. Stechert & Co., New York, N. Y.; edition 2; 1944; price $4.50.

Reviewed in *Chem. Eng. News 24,* 3102 (Nov. 25, 1946). TTD: 3-47

Synthetic fibers I 4

Nylon. The word nylon. Anon. *Rayon Textile Monthly 28,* 22 (Jan. 1947).

Nylon, a generic term, is defined. TTD: 3-47

Nylon. Nylon keeps right on working for Cheney Bros. Anon. *Rayon Textile Monthly 28,* 23-5 (Jan. 1947).

The weaving, printing and finishing of nylon fabrics at Cheney Mills is generally discussed. TTD: 3-47

Nylon. Over century of thread-making know-how. Richard T. Kropf, Belding Heminway Corticelli. *Rayon Textile Monthly 28,* 21-2 (Jan. 1947).

A brief résumé of nylon thread production at Belding Heminway Corticelli. TTD: 3-47

Washing nylon. Washing nylon fabrics. Beth Peterson, E. I. du Pont de Nemours & Co. *Rayon Textile Monthly 28,* 28 (Jan. 1947).

Laundering directions for nylon fabrics are briefly given.
HAM TTD: 3-47

Nylon type polymers. Arthur W. Larchar (to E. I. du Pont de Nemours & Co.). USP 2 412 993, Dec. 24, 1946.

Through an improved method of manufacturing nylon type polymers, excess reagents, from the precipitation and isolation of the modified polymer (N-alkoxymethyl polyamide), are more easily and cheaply recovered. Modified polymers of this type are useful as coatings, films, insulation, adhesives, and also for spinning into filaments, fibers, and bristles. TTD: 3-47

Tapered nylon filaments. Imperial Chemical Indus-

tries, Ltd. Brit. P. 578 324. *Textile Mfr. 72,* 553 (Oct. 1946).

Continuously tapered nylon filaments are formed by cold drawing (to at least 80% of the possible extent), at the same time heating to between 40 and 100°C.
TTD: 3-47

SYNTHETIC FIBER DEVELOPMENTS IN GERMANY. LeRoy H. Smith, Editor. Textile Research Inst., Inc. 10 E. 40th St., New York, N. Y.; 1946; 1042 pp.; price $10.00.

Reviewed in *Chem. Eng. News 24,* 3102, 3104 (Nov. 25, 1946). TTD: 3-47

Fiber applications I 5

Resin coated fibers. Fred W. Duggan (to Carbide & Carbon Chemicals, Ltd.). Can. P. 438 746, Dec. 24, 1946.

A porous, flexible, fibrous material impregnated with a carboxylic acid resin copolymer has a calendered coating of polyvinyl chloride (92-100%). TTD: 3-47

Fiber processing I 6

Filament treatment. Henry J. McDermott & Richard W. Stanley (to Am. Viscose Corp.). USP 2 413 413, Dec. 31, 1946.

Liquids, such as lubricating and conditioning agents but especially hot water, are applied to filaments and yarns, particularly viscose, by an improved, substantially non-clogging device. TTD: 3-47

Oiling fibers. Howard J. Billings (to Monsanto Chemical Co.). USP 2 413 428, Dec. 31, 1946.

Improved fiber lubricants comprise the alkali and alkylolamine salts of alkyl phosphoric acids wherein the alkyl group contains no more than 5 C atoms. These lubricants are substantially odorless, nonflammable, nonvolatile, noncorrosive and are readily removed by scouring.
TTD: 3-47

Treating alginate fibers. D. McCreath (to Imperial Chemical Industries, Ltd.). Brit. P. 578 016. *Textile Mfr. 72,* 553 (Oct. 1946).

Improved strength and swelling resistance are imparted to alginate fabrics by treatment with a protein solution or by extrusion into a protein coagulating bath. In an example, calcium alginate fibers are steeped in a 1% gelatin solution 1 1/2 hrs., removed, and dried. After immersion for 1 min. in a hardening solution of 37% formaldehyde 100, ethyl alcohol 100, glucine acetic acid 5, and chrome alum 2 parts in water, 400 parts/wt., they are air-dried. Fibers so treated have a wet breaking strength of 64 g. (as against 31 g. for untreated fibers).
TTD: 3-47

INORGANIC FIBERS II

Fiberglas. Production, properties, and uses of Fiberglas textiles. Anon. *Traveler* No. 119, 8-15 (Apr. 1947).

Incombustibility and dimensional stability are 2 properties that especially recommend Fiberglas textiles. The staple fiber and continuous filament processes are 2 production methods briefly described. TTD: 3-47

Glass fibers. The spider surpassed. Anon. *Ind. Bull. A. D. Little Inc.* No. 231 (Apr. 1947).

Various uses of superfine (0.00005" diameter) fibers of Fiberglas are reviewed, including: soft batting for heat and sound insulation, mattresses, pillows, cushions, etc. TTD: 3-47

Glass fibers. Owens-Corning Fiberglass Corp. Brit. P. 577 436. *Textile Mfr. 72,* 551 (Oct. 1946).

A circular blower gathers streams of molten glass as they issue from a container, forms them into groups, and attenuates them. TTD: 3-47

Glass sliver. Owens-Corning Fiberglass Corp. Brit. P. 577 650. *Textile Mfr. 72,* 552 (Oct. 1946).

Glass fibers deposited on a rotating drum are reinforced with a continuous strand of adhesive coating material. TTD: 3-47

ASBESTOS. Oliver Bowles. The Ruberoid Co., 500 Fifth Ave., N. Y. 18, N. Y.; 40 pp.

Cited in *Chem. Eng. 54,* No. 3, 278 (Mar. 1947). TTD: 3-47

COMPRESSED ASBESTOS FIBER JOINTING. Specification D. T. D. 378A; 1946; price 1s 1d.

Listed in *Govt. Publications (Great Britain)* (Dec. 1946). TTD: 3-47

FIBER TO YARN III

Fiber preparation III 1

Nylon staple. Opening, picking and blending of nylon staple. Arlington Boylston. *Rayon Textile Monthly 28,* 29-31 (Jan. 1947).

Nylon used in blends with wool and with viscose and acetate rayon results in yarn of increased strength. General suggestions for opening and blending are given. The use of blade beaters is cautioned against; pin beaters and Kirschner beaters are recommended instead. Blending feeders are the most important equipment in opening nylon, the most even blend being obtained by a sandwich mix.

HAM TTD: 3-47

Jute sliver rolls. Gordon S. Fraser (to Douglas Fraser & Sons, Ltd.). USP 2 413 042, Dec. 24, 1946.

Slivers of jute or other bast fibers are wound into rolls, and the rolls delivered to a receiver one at a time, by means of an improved apparatus consisting of an inclined track having guide plates or bars, preferably spring loaded levers, on opposite sides which prevent the sliver rolls from tilting. TTD: 3-47

Drafting mechanism. Ramón B. Solanas. Can. P. 438 866, Dec. 31, 1946.

On a drafting mechanism textile slivers are condensed by an improved method through intermediate drafting rolls. TTD: 3-47

Blends III 2

Asbestos-viscose blends. Am. Viscose Corp. Brit. P. 577 623. *Textile Mfr. 72,* 551 (Oct. 1946).

An improved yarn is produced by blending asbestos and viscose staple fibers, the viscose being at least 9.25 wt.%. TTD: 3-47

Spinning III 3

Long-draft spinning. Long-draft spinning recent developments. Walter Gayle, Saco-Lowell Shops. *Am. Wool Cotton Reptr. 60,* No. 45, 9-10 (Nov. 7, 1946).

Three different systems of long-draft spinning are briefly reviewed: Single Belt (Saco-Lowell), Casablancas (Whitin), and 4-Roll (H. & B.). TTD: 3-47

Rayon combination yarn. Problem in manufacture of rayon combination yarn. H. R. Mauersberger. *Rayon Textile Monthly 27,* 542-3; *28,* 14-16 (Oct. 1946; Jan. 1947).

Calculations involved in laying out a rayon combination yarn are discussed with examples, 2 methods being suggested. TTD: 3-47

Spindle adapter. Joanna spindle adapter. Anon. *Cotton 110,* No. 11, 104 (Nov. 1946).

An aluminum adapter, for use on old spindles, will take paper bobbins which can hold about 4000 yds. of 30s yarn. TTD: 3-47

Spinning spindle. Earl S. Wood (to Whitin Machine Works). USP 2 413 092, Dec. 24, 1946.

A rotatable spindle for twisting and winding machines has a vertically adjustable blade, so adjusted that there is no oil leakage. TTD: 3-47

Thread board. Louis M. Cotchett (to Saco-Lowell Shops). USP 2 413 172, Dec. 24, 1946.

The thread board of a spinning frame comprises a series of lappets (each with a thread guide) operable individually (as for piecing up) or as a unit simultaneously (as for doffing). Such thread boards are substantially free of lint and fly accumulations so that little or no cleaning is ever required. TTD: 3-47

Winding III 4

Pirn winder. Weston Lancashire-built pirn winder. Anon. *Fibres, Fabrics & Cordage 13,* 468-9 (Nov. 1946).

A nonautomatic winder (an automatic type soon to be available) made in single-spindle units, units being mounted in groups of 5 on tubular steel frames, is briefly described and illustrated. TTD: 3-47

Expansible spindle. Harry C. Wolfenden. USP 2 413 091, Dec. 24, 1946.

A radially yieldable spindle is expanded during winding of yarns or filaments and then after completion of winding is allowed to contract. Thus the internal pressures are relieved on the wound material and the subsequent tendency to matting and compacting prevented, penetration of dyes being thereby facilitated. TTD: 3-47

Cop winder. G. W. Shackleton (to R. H. Smith & Geo. Hattersley & Sons, Ltd.). Brit. P. 577 660. *Textile Mfr. 72,* 552 (Oct. 1946).

The thread guide of a cop winder has an improved control and driving means consisting of a rack and pinion controlled by a feeler mechanism mounted on the thread guide carriage. TTD: 3-47

Yarn processing III 5

Cotton yarn treatment. U. S. Rubber Co. Brit. P. 577 441. *Textile Mfr. 72,* 551 (Oct. 1946).

The strength of cotton yarn is increased by wetting the yarn with a wetting agent, stretching while wet, treating with hot water and stretching further, and then drying under tension. TTD: 3-47

Treating acetate yarn. Brit. Celanese, Ltd. Brit. P. 577 721. *Textile Mfr. 72,* 552-3 (Oct. 1946).

Stretched filaments of cellulose acetate, suitable for window screens, are bound together with a compound compatible with the cellulose ester. In an example 10 bobbins of 75 denier stretched acetate yarn were plied together with 5 turns per inch. After immersion in acetone (10% ethylcellulose) the plied yarn was passed into a 9% solution of ethylcellulose in benzene, a smooth, lustrous filament being obtained after solvent removal. TTD: 3-47

Yarn products III 6

Rayon tire cord. Rayon in tires. G. S. Dolby. *Fibres 7,* 321-5 (Nov. 1946).

Rayon and cotton are compared as tire cord. The development of rayon for this purpose has stimulated cotton research, and it is thought likely that both rayon and cotton will have important, though perhaps not equal, parts in tire manufacture. TTD: 3-47

Resin coated cords. J. W. Illingworth (to Dunlop Rubber Co., Ltd.). Brit. P. 577 982. *Textile Mfr. 72,* 553 (Oct. 1946). (*Cf.* Australian P. 122 227, Sept. 19, 1946: TTD: 12-46, p. 555.)

Resin coated cords, fabrics, and yarns, after impregnation, are dried with superheated steam at atmospheric pressure so that they are easily handled and not unduly tacky. TTD: 3-47

CORDAGE INDUSTRY. Brit. Intelligence Objectives Subcommittee, Report No. 613; price 7s 2d. TTD: 3-47

YARN TO FABRIC IV

Yarn preparation IV 1

Cotton sizes. Cotton warp sizing. Paul V. Seydel. *Cotton 110,* No. 11, 59-63 (Nov. 1946).

Various types of materials available as sizes are reviewed, choice of one or another being dependent on such considerations as uniformity, availability, costs, compatibility with other materials used, etc. TTD: 3-47

Slashing. Slashing problems answered by Georgia textile group. Anon. *Am. Wool Cotton Reptr. 60,* No. 44, 15-16 (Oct. 31, 1946); *Cotton 110,* No. 11, 66-8, 70 (Nov. 1946).

A round table discussion on starch extenders, variable speed drives, supplementary drying, moisture controls, etc. TTD: 3-47

Slashing. Not speed but production is final objective. Anon. *Warp Sizing Specialist* (Mar. 1947).

Greater production in both slashing and weaving is frequently obtained at something less than top possible speed, because of fewer breakage stops.
LCL TTD: 3-47

Weaving IV 2

Weaving pattern. Weaving of fancy with saving on box chain. Kelmas. *Fibre & Fabric 99,* No. 3227, 10-11 (Dec. 7, 1946).

Practical suggestions, along with pattern diagrams, are given for weaving fancy plaids on automatic looms, an

important feature of which allows cutting the box chain in half (e.g., instead of 300 bars in the box chain to weave a certain pattern, 150 bars are adequate).
TTD: 3-47

Wool weaving. Wool weaving in Madras. V. G. Ranakrishna Ayyar. *Indian Textile J. 57,* 40-2 (Oct. 1946).

A brief review of the industry including sheep breeding and marketing of wool. Of some 23,000,000 sheep in British India, nearly half are to be found in Madras.
TTD: 3-47

Woven heating element. Louis Spraragen (to Bridgeport Fabrics, Inc.). USP 2 412 843, Dec. 17, 1946.

An electric resistance unit, suitable for heating pads and blankets but particularly as a heating casing for pipelines on an airplane, comprises a continuous woven strip in which the warp strands are an insulating material (preferably glass fibers) and the weft strands fine, flexible resistance wire. TTD: 3-47

Loom. Gustav W. B. Rickelmann (2/5 to Victor Mosca). USP 2 413 155, Dec. 24, 1946.

A shuttle mechanism controls the filling yarns by means of batten. TTD: 3-47

Warp beam tension. Moses P. Epstein & Clarence R. Barton (to Industrial Rayon Corp.). USP 2 413 223, Dec. 24, 1946.

By use of a slip-friction brake warp threads from a number of beams are uniformly tensioned through an improved beam rack for mounting the beams. This improved tension control is especially advantageous in weaving tire cord fabric. TTD: 3-47

Picker motion loom. Jos. Nault. USP 2 413 643, Dec. 31, 1946.

An improved sweep arm for picker looms is cushioned against shock at the end of each stroke by means of a semi-solid rubber cushion. TTD: 3-47

Loom. Otto Zollikofer (to Sulzer Frères, S. A.). USP 2 413 672, Dec. 31, 1946.

On a loom with big weaving width transverse tensions are greatly reduced by cutting the weft threads between 2 pairs of binding threads (preferably) while the fabric strips are stretched at the temples. TTD: 3-47

Shuttle guard. A. T. Arnold. Australian P. 123 211, Jan. 16, 1947.

A safety device that protects against injury from a flying shuttle consists of a guard bracket molded to the hand rail which is pivotally mounted to allow access to the warp shed, reed, or shuttle. If in starting the loom the guard is in open position, oscillation of the hand rail will cause the guard arm to fall into the closed position.
TTD: 3-47

Electrical dobby. Sample Weaving Machine Co., Ltd. Swiss P. 245 637, Apr. 10, 1945; *in German.*

Electrical dobby motion. TTD: 3-47

Shuttle. A.-G. Adolph Saurer. Swiss P. 245 638, July 24, 1945; *in German.*

A shuttle trap device. TTD: 3-47

Knitting IV 3

F. N. F. knitter. Flying needle frame. Walter Clark. *Knitter 10,* No. 11, 31, 58 (Nov. 1946).

The F. N. F. knitting machine is discussed further, particularly as to the construction of the needle, which is tubular. TTD: 3-47

F. N. F. knitter. High-speed F. N. F. knitter creates great interest. T. H. A. Llewellyn, F. N. F., Ltd. *Am. Wool Cotton Reptr. 60,* No. 42, 57, 59, 61-2 (Oct. 17, 1946); *Knitter 10,* No. 11, 25-8, 31 (Nov. 1946).

The operation of the new tricot machine (with an operating speed of 1000 courses per minute and annual production of 35,000 lbs. of jersey) is briefly explained.
TTD: 3-47

Nylon moistening. Method for moistening nylon. Wm. B. Griffin, Kali Mfg. Co. *Cotton 110,* No. 11, 178, 180 (Nov. 1946).

A sixth method (for 5 previously cited see TTD: 7-46, p. 318) of feeding solutions into moistening troughs of full-fashioned knitting machines is outlined and diagrammed, diagrams of the other methods being sketched for comparison. TTD: 3-47

Seamless knitting machine. The Holdstitch: a new seamless knittting machine. Anon. *Knitter 10,* No. 12, 36, 39 (Dec. 1946).

An automatic seamless machine (patented by Clarence Minton and produced by American Textile Machine Corp.) embodies as an essential feature a novel needle control. Four photographs. TTD: 3-47

Warp knit fabric. Chas. R. Burns (to Vanity Fair Mills, Inc.). USP 2 412 869, Dec. 17, 1946.

A fabric having improved qualities of elasticity and snap is knitted on a tricot warp knitting machine having a needle bar and 2 yarn guide bars. The fabric consists essentially of a base fabric of inelastic yarns and elastic yarns laid in zig-zag fashion. TTD: 3-47

Knitting machine. J. G., J. R., W. R., & E. B. Jones, F. G. Alcock & I. J. Thomasson (to Jones Bros.

Proprietary, Ltd.). Australian P. 123 099, Jan. 16, 1947.

Knitting and sinker cams on a straight bar knitting machine are so shaped as to operate the needles and sinkers a number of times during each traverse.
TTD: 3-47

Knitting needle gage. J. T. Nock & L. Copley-Smith & Sons, Ltd. Australian P. 123 210, Jan. 16, 1947.

A pivotally mounted, spring controlled needle indicates on a scale, through a tapered slot, the gage of a knitting needle. TTD: 3-47

Knitting. H. N. & E. E. Smith. Brit. P. 577 577 & 577 595. *Textile Mfr. 72,* 551 (Oct. 1946).

In producing knitted fabrics the stress is materially reduced by an improved method of loop formation and transfer whereby new loops are drawn coursewise in succession from slack threads with a looper.
TTD: 3-47

TRICOT FABRIC DESIGN. Thos. H. Johnson. McGraw-Hill Book Co.; 124 pp.; price $2.50.

Reviewed in *Rayon Textile Monthly 28,* 57 (Jan. 1947).
TTD: 3-47

Special fabrics IV 4

Elastic fabric. Elastic fabric without rubber. Anon. *Am. Wool Cotton Reptr. 60,* No. 42, 78 (Oct. 17, 1946).

U. S. Rubber's Strex, whose elasticity is achieved by twisting cotton yarn into the shape of a coil spring, is useful in slipcovers, gloves, sweaters, and surgical bandages, but not for girdles, corsets, and the like.
TTD: 3-47

Knitting. Principles of knitting. Wm. E. Shinn, N. C. State College, School of Textiles. *Knitter 10,* No. 2, 26, 28, No. 3, 34, 36, 56, No. 4, 28, 30, 32, 76, No. 6, 45-6, 48, No. 7, 26, 28-30, No. 8, 26-7, 60-1, No. 9, 32, 34, No. 10, 35-6, No. 11, 34, 58-61 (Feb., Mar., Apr., June, July, Aug., Sept., Oct., Nov. 1946).

Yarn numbering systems are discussed and a method of calculating equivalent yarn counts is described and illustrated by examples. Production calculations are discussed with examples. The operation of seamless hosiery machines is described in detail with the aid of diagrams showing needle movements and photographs of various parts of the machines. The operation of the model K machine (for women's hosiery) is described and the machine illustrated with detailed diagrams. (These articles on knitting, of which the last cited is the

twenty-first, are published now in a book as "Principles of Knitting," I (price $3.00); volume II will follow.)
TTD: 3-47

Adhesive tape backing. Johnson & Johnson (Great Britain) Ltd. Brit. P. 577 752. *Textile Mfr. 72,* 553 (Oct. 1946).

Adhesive tape has a flexible fabric backing and an intermediate barrier film consisting of polyisobutylene and a filler. In an example, a barrier film is composed of polyisobutylene, 300, Witco clay No. 2, 600, ester crum, 120, lanolin, 4, and toluene solvent, 606 parts. TTD: 3-47

NETTING INDUSTRY. Brit. Intelligence Objectives Subcommittee, Report No. 631; price 1s 1d.
TTD: 3-47

Fabric processing IV 5

Drying. Cotton goods finishing methods and machines. Anon. *Am. Wool Cotton Reptr. 60,* No. 41, 15-18 (Oct. 10, 1946).

Operation and basic features of common driers (i.e., can or cylinder, cell, vacuum, festoon, and tenter) are described and briefly discussed. TTD: 3-47

Fabric applications IV 6

Fabric coatings. New synthetic fabric coatings. C. S. Jones. *Indian Textile J. 57,* 51-3 (Oct. 1946).

The use of synthetic rubbers, resins, and other plastics for fabric coatings is briefly reviewed with a brief note on German developments in waterproofing.
TTD: 3-47

Plastic fuel tanks. Bullet-proof fuel tanks. Anon. *Brit. Plastics 18,* 509-10 (Nov. 1946).

The development of the Marflex fuel tank is briefly described. A synthetic resin, Formvar-glyceryl-adipate, is calendered onto a 2-ply cotton fabric, and the resulting material is then bullet-proofed by 2 layers of woven felt, with a rubber sheet sandwiched between, and an outer layer of 12-oz. cotton fabric (for which glass cloth can be substituted as additional fire protection).
TTD: 3-47

Plastic upholstery. For dogs, babies and beauty. Anon. *Ind. Bull. A. D. Little Inc.* No. 229 (Feb. 1947).

The use of vinyl coatings for upholstery materials in the home, automobile, airplane, etc., is briefly reviewed.
TTD: 3-47

Laminated fabric. Jos. S. Hull (to Am. Pad & Textile Co.). Can. P. 438 724, Dec. 24, 1946.

Two fabrics, whose opposing faces are first coated with a thermoplastic material and one face then exposed to

radiant heat rays, are pressed together while still in the plastic condition, to form a marginal bond. TTD: 3-47

Filter. Southwick W. Briggs. Can. P. 438 844, Dec. 31, 1946.

A fabric web is folded in zigzag formation and the folds stitched together at one surface and then bent into a cylindrical form to produce a tubular filter for fluids. TTD: 3-47

Laminate. Michael A. Zirille & Walter R. Hoover (to Dominion Rubber Co., Ltd.). Can. P. 438 907, Dec. 31, 1946.

Laminated paneling material consists of at least 2 plies of woven fabric, one of which is colored, at least one ply of woven glass cloth (as an outer ply), and intermediate layers of holland cloth, the whole impregnated with a thermosetting resin. TTD: 3-47

CHEMICAL RAW MATERIALS V

Plastics and elastomers V 1

Melamine resins. The melamines. Anon. *Brit. Plastics 18,* 511-13 (Nov. 1946).

A brief review. TTD: 3-47

Nylon plastic. Pinion gears and rods made of nylon. Anon. *Rayon Textile Monthly 28,* 28 (Jan. 1947).

Production of nylon plastic gears and rods (by Polymer Corp.), which can be machined accurately, is briefly noted. TTD: 3-47

Plastics. Georgia and the plastics industry. Jos. B. Hosmer, State (Georgia) Eng. Expt. Station. *Research Engineering, 9,* No. 3, 11-12, 20-2 (May, 1947).

The impact of developments in plastics on Georgia industries is briefly assessed. In plastics processing, particularly, the production of woven plastic products such as window screening, automobile upholstery, draperies, etc., and especially the production of Saran monofil cloth (e.g., Chicopee's Lumite) is commented upon. TTD: 3-47

Synthetic rubber. Elasticity measurements of polychloroprenes. Per-Olof Kinell, Univ. of Upsala (Sweden). *J. Phys. & Colloid Chemistry 51,* 70-9 (Jan. 1947).

Views concerning the nature of the rubber-like state are reviewed, and the behavior of vulcanized and unvulcanized rubber samples investigated with a Polanyi dynamometer. Certain constants characterizing the samples were calculated by means of Wall's formula for entropy change on stretching. TTD: 3-47

Vinyl resins. Compounding of vinyl resins. Anon. *Brit. Plastics 18,* 494-5 (Nov. 1946).

Some details of sheet production include brief mention of mixing, calendering, and coating. TTD: 3-47

Fabric coating. Frank J. Soday (to United Gas Improvement Co.). USP 2 412 920, Dec. 17, 1946.

A plasticizing agent for cellulosic derivative plastics, which are useful as adhesives, binders, as fabric coatings, etc., consists of an aromatic oil that boils (preferably) between 325 and 450°C. TTD: 3-47

Polyvinyl acetate. Jos. E. Smith & Wm. A. Drummond (to E. I. du Pont de Nemours & Co.). USP 2 413 197, Dec. 24, 1946.

Highly stable aqueous dispersions of polyvinyl acetate, produced by an emulsion-polymerization process are useful as textile finishes. TTD: 3-47

Acetal ester polymers. Frank E. Wilson, Gustavus J. Esselen & Gaetano F. D'Alelio (to Pro-Phy-Lac-Tic Brush Co.). USP 2 413 275, Dec. 24, 1946.

New high polymers are made by simultaneous acetalization and esterification of polyvinyl alcohol with HCHO and maleic anhydride. Maleic anhydride reacts in 3 ways (esterification, cyclization and cross linkage) under the reaction conditions. An essential feature is the use of a nonaqueous medium (e.g., benzene or heptane), with continuous removal of the water of reaction by distillation. Polyvinyl alcohol filaments or fabrics, when used in this reaction, are greatly strengthened without sacrificing softness or flexibility. TTD: 3-47

Plastic abrasive pad. Leonard H. Englund (to Jas. H. Rhodes & Co.). USP 2 413 551, Dec. 31, 1946.

A plastic cleaning or scouring pad consists of a mass of continuous plastic filaments impregnated with an abrasive coating prior to cooling of the plastic. TTD: 3-47

Nylon coating. R. P. Foulds, W. H. Roscoe & W. H. Watson (to Tootal Broadhurst Lee Co., Ltd.). Australian P. 123 059, Jan. 16, 1947.

Fibrous materials may be coated from an acid solution of nylon, the nylon being precipitated by an aqueous medium. TTD: 3-47

Regenerated cellulose purification. Brit. Cellophane, Ltd. Brit. P. 577 657. *Textile Mfr. 72,* 552 (Oct. 1946).

Fibers, films, etc., of regenerated cellulose are purified in a continuous process by treatment, while in the gel state, in a desulfurizing bath. TTD: 3-47

Casein-formaldehyde plastic. J. B. Speakman & J. L.

Stones (to Erinoid, Ltd.). Brit. P. 577 753 & 578 148. *Textile Mfr. 72,* 553 (Oct. 1946).

Preformed casein-formaldehyde plastics are waterproofed by treating with a tannic acid solution or 1 or more soluble quinones (e.g., benzoquinone).
TTD: 3-47

BUTALASTIC POLYMERS. Frederick Marchionna. Reinhold Publishing Corp.; 1946; 642 pp.; price $8.50.

Reviewed in *Rayon Textile Monthly 28,* 57 (Jan. 1947).
TTD: 3-47

HISTORY AND ROMANCE OF ELASTIC WEBBING. Clifford A. Richmond. Easthampton News Co., Easthampton, Mass.; 218 pp.; price: $1.50.

Reviewed in *India Rubber World 115,* 580 (Jan. 1947).
TTD: 3-47

PLASTICIZERS FOR POLYVINYL CHLORIDE. Field Information Agency, Technical, Report No. 861; price 2s 7d.
TTD: 3-47

RUBBER AND PVC INSULATED CABLES. (B. S. S. No. 7-1946). Anon. British Standards Institution, 28 Victoria St., London, S. W. 1; price 3s 6d.

Reviewed in *Brit. Plastics 18,* 518 (Nov. 1946).
TTD: 3-47

Surface-active compounds V 2

Glycerine. Modern roles for glycerine in textile processes. Georgia Leffingwell & Olive S. Linkletter. *Rayon Textile Monthly 28,* 50-2 (Jan. 1947).

The varied uses of glycerine in textile coatings and finishes, emulsions, dyeing and printing, as disclosed in recent U. S. patents, are briefly discussed.
HAM TTD: 3-47

Textile chemicals. Oils, fats, and waxes. Russell Gill. *Cotton 110,* No. 11, 43-6, 55, (Nov. 1946).

The varied uses of oils and fats are briefly reviewed and the following processing briefly discussed: (1) blending for warp sizing compounds, (2) sulfonation, (3) saponification, (4) hydrogenation, and (5) manufacture of surface-active agents.
TTD: 3-47

Textile cleaners. Formulation of spot cleaners. Irving Reich, Foster D. Snell, Inc. *Chem. Industries 60,* 423-4 (Mar. 1947).

Packaging and marketing of dry cleaning fluids require careful consideration of properties of possible fluids, including toxicity, volatility, and corrosiveness.
LCL TTD: 3-47

Felt hat stiffener. Alfred E. Hodshon & Harold H. Tucker (to John B. Stetson Co.). USP 2 413 229, Dec. 24, 1946.

Felt hats may be stiffened by treating with a zein solution (instead of shellac, as formerly) which does not adversely affect subsequent hot water and dyeing treatments. Example: rosin 15, caustic soda 1, zein 75 g and alcohol 85 cc, dispersed in water.
TTD: 3-47

TEXTILE CHEMICAL SPECIALTY GUIDE. H. R. Mauersberger, Editor. Textile Book Publishers, Inc., New York 16, N. Y.; ed. 4; 1946; 408 pp.; price $5.00.

Reviewed in *Rayon Textile Monthly 28,* 57 (Jan. 1947).
TTD: 3-47

CHEMICAL PROCESSING VI

Continuous fulling. Continuous fulling machine developed by Hunter Co. Anon. *Am. Wool Cotton Reptr. 60,* No. 42, 79-82 (Oct. 17, 1946).

More uniform fulling, increased production, elimination of mill wrinkles in cloth, and elimination of tangling (because cloth is pulled off the pile at each end rather than from the bottom of the pile) are among important advantages of the new continuous fulling mill which is described and illustrated in some detail.
TTD: 3-47

Developments in finishing. Chemical developments in textile finishing. L. J. Sheps, Onyx Oil & Chemical Co., Ltd. *Can. Textile J. 63,* No. 22, 40-2 (Nov. 1, 1946).

Developments and improvements in finishes, reviewed in an address before the Federation of Textile Technical Associations (Canada), are briefly summarized.
TTD: 3-47

Finishing Fibro. Some aspects of dyeing and finishing of Fibro, with special reference to spun-dyed Fibro. H. A. Thomas. *J. Soc. Dyers Colourists 62,* 309-13 (Oct. 1946).

The development of spun-dyed Fibro should mean more, not less, business for the piece dyer since it is not anticipated that spun-dyed Fibro will replace existing styles but will add to the range and quantity of fabrics. While raw stock dyeing to fast shades with vat, azo, or sulfur dyes cannot compete costwise in certain shades, there is a commercial limit to the number of shades and staple lengths available in spun-dyed Fibro. In the continuous processing of Fibro tensionless machinery is best used. To achieve the required shrinkage control an overfeed pin stenter is considered best.
TTD: 3-47

Fulling jersey. Finishing jersey fabric. Anon. *Am. Wool Cotton Reptr. 60,* No. 45, 12 (Nov. 7, 1946).

A fulling method for shrinking jersey cloth to give a hard finish and eliminate stretch is briefly discussed.
TTD: 3-47

Moiré finish. Moiré fabric finishing. Hans A. Holterhoff, Newburgh Moiré Co., Inc. *Rayon Textile Monthly 28,* 38 (Jan. 1947); *Fibre & Fabric 99,* No. 3226, 14 (Nov. 30, 1946).

Producing a moiré finish on fabrics is briefly described, two methods being used (i.e., the "Français" and the "Scratch").
HAM TTD: 3-47

Rayon saponification. Saponification of acetate rayon. Anon. *Rayon Textile Monthly 27,* 20 (Jan. 1947).

Cellulose acetate is saponified to permit dyeing by direct cotton dyes. The best saponifying agent appears to be NaOH, a 10% saponification being considered desirable.
HAM TTD: 3-47

Scouring wool. Use of sodium tetraphosphate in wool scouring. Anon. *Fibres 7,* 315 (Nov. 1946).

Because of their ability to prevent formation of insoluble lime soaps, particularly where hard water must be used, various phosphates of Na are suitable in wet processing of textiles (as in scouring wool). TTD: 3-47

Scouring wool. Chemical control gives improved wool scouring. A. L. Dubeau & G. P. Vincent, Mathieson Alkali Works, Inc. *Am. Dyestuff Reptr. 35,* 469-71 (Oct. 7, 1946).

Chemical controls which regulate the proportion of bicarbonate result in an increased rate of scouring, improved quality of wool, and reduced cost. The optimum alkalinity ratio of carbonate to bicarbonate was found to be 1:1, this ratio being maintained by adding controlled amounts of aqueous caustic soda. TTD: 3-47

Wool processing. Wet finishing wool goods methods and machines. Ernest Cannity, Jas. Hunter Machine Co. *Am. Wool Cotton Reptr. 60,* No. 45, 11-12 (Nov. 7, 1946); *Fibre & Fabric 99,* No. 3223, 10 (Nov. 9, 1946).

A continuous cloth washer (the equivalent of 32 dolly washers), a tenter and cloth carbonizer, and a continuous fulling mill are among improvements in wet finishing of wool that are briefly reviewed. TTD: 3-47

Cellulose ester stabilization. Brit. Celanese, Ltd. Brit. P. 577 963. *Textile Mfr. 72,* 553 (Oct. 1946).

Cellulose acid esters are stabilized by treatment with H_2SO_4 solution containing a wetting agent (0.05-0.10 wt.%). TTD: 3-47

Mercerizing. Patentverwertungs-G.m.b.H. Hermes. Swiss P. 245 641, Nov. 16, 1943; *in German.*

A device for the measurement and automatic regulation of cloth in textile processing machines, especially mercerizers. TTD: 3-47

COLOR VII

Color. Man learns about color. Bruce Brown. *Rayon Textile Monthly 28,* 48-9 (Jan. 1947).

A brief historical survey traces man's consciousness and use of color from the primitive man of 25,000 years ago. TTD: 3-47

BLEACHING, DYEING, AND CHEMICAL TECHNOLOGY OF TEXTILE FIBERS. S. R. & E. R. Trotman, Chas. Griffin & Co., Ltd., 42 Drury Lane, London; ed. 2; 536 pp.; price 60s.

Reviewed in *Fibres, Fabrics & Cordage 13,* 461 (Nov. 1946). TTD: 3-47

Bleaching VII 1

Bleaching cotton. Stuart M. Rogers (to Solvay Process Co.). USP 2 417 570, Mar. 18, 1947.

In bleaching cotton the bleaching action of the hypochlorite is controlled by the presence of an alkali metal stannate (such as Na_2SnO_3) so that superior whites (brightness of at least 86, as measured by G. E. reflection meter) are obtained and there is a lessened tendency of the bleached material to yellow. TTD: 3-47

Dyeing VII 2

Dye liquor heating. Hot water heating of dye liquor. Thos. R. Smith, OQMG consultant. *Am. Dyestuff Reptr. 35,* 512 (Nov. 4, 1946).

The hot water system for heating dye liquor (at the plant at Schachenmayr, Mann & Cie.) is briefly noted and the principle explained by a sketch. TTD: 3-47

Dyeing. Modern American dyeing practice. Anon. *Dyer 96,* 454-5 (Nov. 8, 1946).

A lecture (by Geo. H. Schuler, E. I. du Pont de Nemours & Co.) reviewing continuous vat dyeing and pad steam methods, is briefly summarized. TTD: 3-47

Dyeing. Dyer's notes. Anon. *Dyer 96,* 465, 467, 469, 565, 567 (Nov. 8, Dec. 6, 1946).

The use of organic solvents in dyeing liquors and their effect (especially swelling) on such synthetic fibers as nylon, Vinyon, and Saran are briefly reviewed. The absorption of direct cotton dyes by cotton and cellulosic rayon materials (as reported by a committee of the Society of Dyers and Colorists) is briefly summarized. TTD: 3-47

Dyeing fabrics. Some suggestions for garment dyeing. W. J. MacNab, Alfred Cotter. *Fibres, Fabrics & Cordage 13,* 420, 422-4, 426 (Oct. 1946).

Three methods for dyeing mixture fabrics are briefly reviewed: (1) 2-bath method, with H_2SO_4, (2) union

dyeing, and (3) 1-bath method with neutral dyeing acid colors and substantive colors. TTD: 3-47

Dyeing hosiery. Dyeing of hosiery in Germany. Thos. R. Smith, OQMG consultant. *Am. Dyestuff Reptr. 35,* 511-12 (Nov. 4, 1946).

An interview with E. Koester, I. G. Farben, Leyerkusen, is briefly summarized. TTD: 3-47

Dyeing methods. Fabric finishing methods now aimed at consumer. Richard Powell, Bradford Dyeing Assn. *Am. Wool Cotton Reptr. 60,* No. 42, 27, 29, 31-2 (Oct. 17, 1946).

After brief mention of the continuous peroxide bleaching process various dyeing processes are briefly reviewed, including the Du Pont continuous pad steam process (using Williams units), and pigment dyeing. TTD: 3-47

Dyeing nylon. Dyeing of nylon and nylon blends. P. J. Choquette, Gen. Dyestuff Corp. *Rayon Textile Monthly 28,* 31-3 (Jan. 1947).

In general directions for dyeing nylon and blends of it, it is pointed out that all types may be used, including resist dyeing.
HAM TTD: 3-47

Dyeing synthetic fabric. In synthetic fabric dyeing end-use factor important. Weldon Helmus, Fair Lawn Finishing Co. *Am. Wool Cotton Reptr. 60,* No. 45, 13, 44 (Nov. 7, 1946), *Fibre & Fabric 99,* No. 3224, 12-13 (Nov. 16, 1946).

Level dyeing requires compatible dyes having similar exhaust rates, good solubility and good leveling power. The dye jig is considered best for taffetas, oxfords, satins, etc., and the dye beck one of the best machines for retaining maximum shrinkage. TTD: 3-47

Vat dyeing. Color changes of vat and azoic dyes by wet and dry heat. E. Kornreich. *J. Soc. Dyers Colourists 62,* 318 (Oct. 1946).

Addition to an earlier paper (*J. Soc. Dyers Colourists 58,* 177 (1942)). From further investigation it is found that 2 vat dyes (Caledon Red 2G and Caledon Red Violet 2RN) deposited in the fiber simultaneously can combine on soaping to form a crystalline system different from that of the respective dyes. It is suggested that aggregation and crystallization are more important in dyeing than heretofore assumed. TTD: 3-47

Winch dyeing. Production of fast shades on knitted cotton fabrics, nets, and lace. E. R. Wiltshire. *J. Soc. Dyers Colourists 62,* 313-18 (Oct. 1946).

In a discussion of dyeing with vat and Soledon dyes on knitted cotton fabrics and laces, using a winch machine,

frothing and oxidation problems are particularly considered as well as a method of dyeing Soledon dyes without removal from the winch. TTD: 3-47

Wool dyeing. Dyeing self-colored wool and hair. Anon. *Dyer 96,* 543-6 (Dec. 6, 1946).

Chrome and acid milling dyes are used to color naturally pigmented loose wool and hair, such self-coloring occurring most frequently as light yellowish or reddish brown, slate, and grayish black. TTD: 3-47

Wool dyeing. Dyeing of wool with chrome dyes. II—Chroming of wool. P. W. Carlene, F. M. Rowe & J. B. Speakman. *J. Soc. Dyers Colourists 62,* 329-38 (Nov. 1946).

The reactions taking place from deposition of Cr compounds in wool from dichromate solutions under normal mordanting conditions were studied. The titration curve of wool with chromic acid at 0°C was determined. It was found by experiment that ammonium salts do not exert a significant protective effect on wool fiber during mordanting with potassium dichromate. It is concluded that the effect of Cr compounds in increasing the resistance to extension of mordanted wool is due simply to their mechanical interference with the unfolding of the main peptide chains. TTD: 3-47

Dyeing films. Raymond C. Greenlees (to Courtaulds, Ltd.). USP 2 413 559, Dec. 31, 1946.

The dyeing of thermoplastic films, particularly cellulose acetate, on a jig dyeing machine is improved by placing the film between 2 lengths of fabric, dyeing being carried out at about 65-70°C and the film being dried at 80-110°C. TTD: 3-47

Pigmented nylon. E. G. Cockbain, J. L. Moilliet & W. Todd (to Imperial Chemical Industries, Ltd.). Australian P. 123 197, Jan. 16, 1947.

A pigment dispersion is incorporated into molten nylon during production. TTD: 3-47

Vat dyeing acetate. Brit. Celanese, Ltd. Brit. P. 578 212. *Textile Mfr. 72,* 553 (Oct. 1946).

Cellulose acetate is mechanically impregnated with a vat dye dispersion and then subjected to an aqueous alkaline reducing bath containing sodium hydrosulfite and sodium carbonate, the leuco compound formed being then oxidized. Shades of good light-fastness and freedom from warp streaks are obtained. TTD: 3-47

VAT DYESTUFFS AND VAT DYEING. M. R. Fox. Chapman & Hall, Ltd., London.

Cited in *Ambassador 1946,* No. 12, 140. TTD: 3-47

Printing VII 3

Print fabrics. History of West African styles. F.

Crompton. *J. Soc. Dyers Coloruists 62,* 307-8 (Oct. 1946).

A lecture, historically reviewing fabric designs, is briefly summarized. TTD: 3-47

Printing cotton fabric. Printing cotton fabric with basic dyestuffs. Anon. *Dyer 96,* 591-3 (Dec. 1946).

Basic dyes are best for printing cotton fabrics where vivid coloring is desired. They are especially suitable for producing designs having fine lines or stringings. Starch-tragacanth thickener is frequently used where large, heavily covered areas are printed (as in bunting). The use of acetine, to produce well blended shades, and of tannic acid as a fixative is discussed. TTD: 3-47

Printing machine. Rice Barton Corp. Brit. P. 577 635. *Textile Mfr. 72,* 551-2 (Oct. 1946).

Fabric to be printed is fed on greige backing cloth, mounted on 2 power-driven rolls, from a supply roll to the printing machine, the rolls being driven at a speed 75% less than the normal movement of the fabric. TTD: 3-47

Measurement and defects VII 4

Color measurement. Specification of color. Walter C. Granville. *Dyestuffs 39,* 98-112 (Winter, 1947). Reprinted from *Interchem. Rev. 4,* 3 (Spring, 1945).

A spectrophotometric curve is the basis of a color specification, and on the basis of this a color map is constructed. TTD: 3-47

Direct cotton dyes. Dyeing properties of direct cotton dyes. Elizabeth F. Mann. *Rayon Textile Monthly 28,* 47-8 (Jan. 1947).

A lecture (by F. L. Goodall, Geigy Co.) is briefly summarized. TTD: 3-47

Dye matching. Matching depth of shade of dyeing on highly oriented rayons. F. Fothergill. *J. Soc. Dyers Colourists 62,* 319 (Oct. 1946).

An appendix is added to a previous paper "Nomogram to help in dyeing of fine and coarse filament rayons and spun rayons to same shade" (*J. Soc. Dyers Colourists 60,* 93 (1944)). TTD: 3-47

Dye migration. Migration in dyeing. Anon. *Dyer 96,* 445-6, 459 (Nov. 8, 1946).

Migration must occur in the presence of moisture. Wide variation exists among dyes in degree and speed of migration. This problem can largely be solved by drying in a hot flue or hot air drier, care being taken to supply the air current to both sides of the cloth at once. TTD: 3-47

Dye solubilization. Solubilization of water-insoluble dye by pure soaps and detergents of different types. Agnes A. Green, Immaculate Heart College, & Jas. W. McBain, Stanford Univ. *J. Phys. & Colloid Chemistry 51,* 286-98 (Jan. 1947).

Measurements on the laurates and oleates of K and Na showed that the Na soaps were the better solubilizers for the water-insoluble dye Orange OT per g-mol. wt. of soap. The cation-active detergent, dodecylamine hydrochloride was found to have a solubilizing effect greater than that of the laurates and comparable with that of lauryl sulfonic acid. The solubilizing power of the non-ionic detergent, Triton X-100, was also studied. TTD: 3-47

Dyeing and heat absorption. Heat absorbing properties of dyed materials. F. F. Jacobs, Gen. Dyestuff Corp. *Rayon Textile Monthly 28,* 45-6 (Jan. 1947).

Registration of dyes of varying heat absorbing and reflecting properties, taken by infrared film, is compared with a Munsell grey scale: black registration shows dyeing of infrared absorbent properties, white, dyeing of infrared reflectent properties. The best absorbent dye for wool was found to be Palatine fast black WANA Conc. These properties were of use to the army in determining proper colors for camouflaging. TTD: 3-47

PROOFING VIII

Flameproofing permanence. Permanence of flameproofed fabrics. S. A. Rulon, M. J. Sostmann & I. L. Phillips, Textile, Plastics and Technical Service, Inc. *Am. Dyestuff Reptr. 35,* 489-92, 501-2 (Oct. 21, 1946).

From investigations of the effect of heat, light, and moisture acting upon fabric treated with antimony oxide and chlorinated paraffin, it was found that the permanence of flameproofing was affected by heat, and by light, with or without the presence of water, and that the flameproofing finish protects against loss of tensile strength besides maintaining flame-resistance. Test procedures are outlined. Fifteen tables and 9 graphs. TTD: 3-47

Flame-resistant finish. New flame-resistant fabric finish. Anon. *Rayon Textile Monthly 28,* 52 (Jan. 1947).

Skylac (Monsanto Chemical) is a flame-resistant fabric finish for exterior and interior surfaces of aircraft. TTD: 3-47

Unshrinkable wool. Use of polymers to make wool unshrinkable. II—Diisocyanates. T. Barr, C. W. Capp & J. B. Speakman. *J. Soc. Dyers Colourists 62,* 338-45 (Nov. 1946).

Since wool fabrics may be made unshrinkable by cross-linking reactions, the use of diisocyanates as possible cross-linking agents is studied, all-wool flannel samples being used in the experiments. A high degree of unshrinkability was obtained by impregnating with 8 wt.% diisocyanate and diamine in benzene solution and then baking for 1 hour at 100°C. TTD: 3-47

Stabilizing regenerated cellulose. Edw. C. Pfeffer, Jr. & Jack Epelberg (to Cluett, Peabody & Co., Inc.). USP 2 412 832, Dec. 17, 1946.

Viscose rayon fabrics are rendered resistant to shrinkage, wrinkling, crushing, and creasing by a stabilizing treatment whereby material is impregnated with an aqueous glyoxal solution (0.6-4.65 wt.%) containing an amino-formaldehyde thermosetting resin, 1-5 wt.% and a catalyst (such as oxalic acid), 0.0125-0.40 wt.%. After impregnation the material is dried under tension and baked at 212-350°F for 2-40 min. TTD: 3-47

Water repellent. Ernst Zerner, Gertrude D. M. Davies & Peter I. Pollak (to Sun Chemical Corp.). USP 2 413 024, Dec. 24, 1946.

Textile materials are rendered water-repellent, and their repellency moderately resistant to subsequent dry cleaning and laundering, by treatment with 1 or another of the Schiff's bases (such as di-heptadecyl ketone and aniline), then drying and baking at 130-150°C. TTD: 3-47

Flameproofing. Osborne C. Bacon (to E. I. du Pont de Nemours & Co.). USP 2 413 163, Dec. 24, 1946.

A weather-resistant, flameproof finish, which does not tender appreciably, is imparted to textile materials, wood, leather, paper, etc., by application from an aqueous bath that contains a protein-resin composition, Sb_2O_3, and a chlorinated paraffin hydrocarbon. TTD: 3-47

Treated fabric. H. A. Young (to U. S. Rubber Co.). Australian P. 123 109, Jan. 16, 1947.

Fabric is treated with synthetic resin, rubber, or the like by direct deposition from an aqueous bath, the treated fabric being rinsed in a bath containing a cation-active reagent. TTD: 3-47

Crease resistance. Imperial Chemical Industries, Ltd. Brit. P. 577 735. *Textile Mfr. 72,* 553 (Oct. 1946).

A crease-resistant finish for natural or artificial cellulosic fibers is produced by a process consisting essentially of reacting ethyleneurea and formaldehyde. TTD: 3-47

Shrinkproofing wool. P. Alexander & R. F. Hudson (to Wolsey, Ltd.). Brit. P. 578 499. *Textile Mfr. 72,* 553 (Oct. 1946).

The tendency of wool materials to shrink is reduced by treatment with gaseous Fl. In an example, ribbed wool socks (150 g), after scouring in soap and ammonia, are dried at 100°C 2 hrs. and placed in a copper vessel into which a mixture of 25% Fl and 75% N was passed for 20 min. at a rate of 200 cc/min. TTD: 3-47

Waterproofing cellulose acetate. Geo. W. Seymour & Geo. C. Ward (to Camille Dreyfus). Can. P. 438 963, Dec. 31, 1946.

Cellulose acetate is rendered water-resistant by a pretreatment with an aqueous solution of $KMnO_4$ (0.1-3 wt.%) at 40-90°C for 1/4-8 hrs., then treating with an aqueous wax emulsion and an insoluble aluminum salt. TTD: 3-47

Waterproofing. Jakob Roderer. Swiss P. 245 644, Feb. 25, 1946; *in German.*

Process for the preparation of a water-impermeable material. TTD: 3-47

MOTHPROOFING OF WOOLEN MATERIALS IN EUROPE. Werner von Bergen. Textile Research Institute, Inc., New York 16, N. Y.; price $1.50.

Reviewed in *Rayon Textile Monthly 28,* 57 (Jan. 1947). TTD: 3-47

TESTING AND ANALYSIS IX

Physical properties IX 1

Cotton quality. Cotton testing service improves fiber quality. John W. Wright, USDA Cotton Testing Branch. *Am. Wool Cotton Reptr. 60,* No. 42, 17-18, 34 (Oct. 17, 1946).

Testing services available to cotton breeders are outlined at NACM convention. TTD: 3-47

Fabric permeability determination. Permeability of proofed fabrics to fumigants. F. P. W. Winteringham & A. Harrison. *J. Soc. Chem. Industry 65,* 409-12 (Dec. 1946).

Apparatus for determining the permeability of proofed fabrics to fumigants under atmospheric conditions is described in detail. The permeability of various samples to methyl bromide and hydrogen cyanide has been determined over a limited range of concentrations at 20.5°C. TTD: 3-47

Testing fabrics. Heat transmission of fabrics between parallel metal plates. Harry C. Brown, Lowell Textile Inst. *Bull. Lowell Textile Inst. 50,* No. 3, 2-11 (Feb. 1947).

A device for measuring heat transmittance through fabrics is described and illustrated in detail. While it

will give reproducible values for 1 set of conditions, no method has been found for correlating values under all conditions. A pressure of 1 g/cm² is suggested as a standard for heat transmittance measurements by this method. TTD: 3-47

Yarn defects. Ivanhoe P. Denyssen (to Am. Viscose Corp.). USP 2 413 486, Dec. 31, 1946.

Irregularities in yarns and filaments (e.g., broken filaments, fuzziness, slubbiness, etc.) are detected by an improved photoelectric device. Yarn travels within the field of a photocell through a shadowed region of a light beam, which normally does not reach the photocell, the yarn normally thus traveling in the dark. Projecting irregularities of the yarn, however, extend into the light beam reflecting light to the cell. The life of the cell is considerably increased since it is activated only by yarn irregularities. TTD: 3-47

Testing static in fibers. Ralph V. Ott (to Camille Dreyfus). Can. P. 438 829, Dec. 24, 1946.

The electrical conductivity and static accumulating properties of textile fibers are tested by a device which consists essentially of a base for holding the fiber sample, a rotatable plate in frictional contact with the sample, and a means for carrying and registering any charge developed. TTD: 3-47

Chemical analysis IX 2

Antiseptic fabrics. Toxicity of germicides. Louis C. Barail, U. S. Testing Co., Inc. *Am. Dyestuff Reptr. 35,* 521-4 (Nov. 4, 1946).

The bacteriostatic and germicidal properties of woven and knit fabrics were tested with more than 250 candidate chemicals; only 15 were found suitable for treating fabrics. After testing these for toxicity 7 were found nontoxic. It is concluded from the tests that a number of unwarranted claims are made with regard to the efficiency of a product, low toxicity and nonirritating properties, and also that the patch test method, described by Schwartz and Peck, is of value in eliminating skin irritants. TTD: 3-47

Fabric stains. Chemistry of ink stain removal from fabrics. Robt. S. Casey, Barbara Bechtel, W. A. Sheaffer Pen Co., & C. S. Grove, Jr., State Univ. of Iowa. *J. Home Econ. 38,* 649-52 (Dec. 1946).

Three general classes of inks may be distinguished: (1) washable, or nonpermanent (using synthetic organic dyes), (2) permanent blue-black, blue, and black (usually containing tannin and iron salt), and (3) permanent alkaline (containing a direct dye in an alkaline solution); a fourth type (black India is of this type) contains finely ground solid pigments in a water solution. All ink spots

should be thoroughly rinsed in water at once, soaking in soap suds is recommended for nonpermanent ink spots; if material is nonwashable warm ethylene glycol (suitable also for alkaline-type permanent ink), or the like, can be tried. Citric acid should be used on an iron tannate ink. TTD: 3-47

Fiber identification. Fiber identification by chemical stains. Anon. *Fibres, Fabrics & Cordage 13,* 412-13 (Oct. 1946).

New finishing techniques and blending of several fibers have made more difficult the distinguishing of 1 fiber in its final form from another. I. C. I.'s Shirlastain A and C are 2 stains that are simple to use and effective for fiber identification. Distinguishing shades for various common fibers are tabulated. TTD: 3-47

Wool analysis. Sodium hydroxide method for determination of vegetable matter in wool. Geo. C. LeCompte & Mayne R. Coe, Jr., USDA. *Am. Dyestuff Reptr. 35,* 509-10 (Nov. 4, 1946).

Another method (*cf.* TTD: 2-46, p. 95) for determining vegetable matter in wool consists of immersing a wool sample 2-3 min. in 10% NaOH, diluting with cold water, filtering off the vegetable matter, washing with water then with 5% NaOCl, washing again, drying and weighing. Yield in most cases, except that of straw (i.e., cockle-burs, sandburs, spiral burs, and alfalfa) was high, greater than 100%, indicating an appreciable quantity of absorbed NaOH. TTD: 3-47

TEXTILE MILLS X

Buildings, machinery, power X 1

Boiler house. Instruments in boiler house. Anon. *Dyer 96,* 615-16 (Dec. 20, 1946).

Reduction in fuel wastes is dependent on accurate record keeping and measurement by the use of such instruments as an integrator (for a mechanical stoker) that records weight of coal fired, a water meter, to measure the water fed into boilers, a feed water thermometer, a pyrometer, and a CO_2 recorder. TTD: 3-47

Dyehouse notes. Notes by dyehouse engineer. Anon. *Dyer 96,* 517, 613 (Nov. 22, Dec. 20, 1946).

Insulating bricks for boiler settings and washing of boiler gases (to free them from S compounds) and also the superiority of brick chimneys over steel are topics very briefly noted. TTD: 3-47

Machinery maintenance. Lublication important factor in reducing textile production costs. Henry Miedendorp. *Rayon Textile Monthly 28,* 41-3 (Jan. 1947).

In a brief general discussion of lubrication and its importance in machinery maintenance the need for establishing

lubrication schedules is stressed. Oiling of gears and spindles is briefly discussed. TTD: 3-47

Oil firing. Economizer explosions. Edw. Ingham. *Dyer 96,* 519, 521, 523 (Nov. 22, 1946).

The dangers from gas explosions in the economizer chamber and factors to be considered in changing from coal to oil firing are briefly reviewed. TTD: 3-47

Steam for dyeing. Steam demand for dyeing. W. Goldstern. *J. Soc. Dyers Colourists 62,* 301-7 (Oct. 1946).

Supplying steam for the dyeing processes is frequently a vexing problem. Steam demand is of 3 types: (1) constant, (2) of known fluctuation, and (3) of unknown fluctuation. Inasmuch as dyeing requires steam at an unknown fluctuating rate, lower boiler efficiency and other heat and fuel losses result. After a consideration of the theoretical aspects of steam supply, 4 solutions to the problem are offered. The best of these suggested solutions comprises use of a steam accumulator, the principle of which, while not new (known for some 30 years), is now much improved. Installation of steam accumulators has been restricted by the high cost; fuel savings, resulting from such installation, soon compensate for much of this cost. TTD: 3-47

Textile machines. New textile machinery developments in Europe. E. Honegger, Swiss Federal Inst. of Technology. *Am. Wool Cotton Reptr. 60,* No. 42, 35, 63 (Oct. 17, 1946).

Among machinery briefly discussed are: the Sulzer loom, a hot air drying slasher, and an improved spinning frame. TTD: 3-47

Lighting and air X 2

Atmospheric control. Temperature-humidity control in seamless hosiery mills. Albert T. Russell. *Cotton 110,* No. 11, 173-4, 176 (Nov. 1946).

Air conditioning equipment is especially desirable in the knitting, ribbing and looping departments. Hosiery mills not having atmospheric control will usually be found to be those unable to afford it. TTD: 3-47

Wastes X 3

Spinning waste. Chasing spinning mill waste. John B. Hatfield. *Cotton 110,* No. 11, 47-50 (Nov. 1946).

Spinning wastes may be divided into legitimate waste and excess waste. Practical suggestions for elimination or control of opening, picker, carding, comber, and roving wastes are given. If excess waste is traceable to the worker, he should be instructed; if to the machine, it should be repaired. TTD: 3-47

Hazards; operations; efficiency X 4

Accidents. Accident frequency related to accident problem. Anon. *Am. Wool Cotton Reptr. 60,* No. 42, 49, 51 (Oct. 17, 1946).

Accidents lead to injury, the serious injury usually being the product of many small accidents. Controlling accident frequency can reduce costs and insurance rates. TTD: 3-47

Accidents. Accident prevention program at Springs Cotton Mills. Geo. E. Baker & J. D. Green, Springs Cotton Mills. *Am. Wool Cotton Reptr. 60,* No. 42, 53, 55 (Oct. 17, 1946); *Cotton 110,* No. 11, 57-8, 63 (Nov. 1946).

Achieving a high degree of safety is made a matter of competition between 2 safety teams, results being tallied monthly. TTD: 3-47

Accidents. Accident prevention brings many valuable by-products. A. C. Phelps, Brandon Corp. *Am. Wool Cotton Reptr. 60,* No. 43, 11-12 (Oct. 24, 1946).

An address before the Southern Textile Assn., reviewing accident causes and emphasizing the keeping of systematic records, is briefly summarized. TTD: 3-47

Safety instructions. Safety instructions for man on job. Anon. *Indian Textile J. 57,* 53 (Oct. 1946).

Specific instructions are given for workers in the finishing, carding, spinning, and picking of wool and for dye-house workers. TTD: 3-47

Safety legislation. Safety legislation in U. K. factories. Anon. *Indian Textile J. 57,* 49-50 (Oct. 1946).

Safety provisions are briefly commented upon with a few case histories cited. TTD: 3-47

BASIC SCIENCES XI

Amylose acetate. Ultracentrifugal and viscometric studies of amylose acetate. Bernard A. Dombrow & Chas. O. Beckmann, Columbia Univ. *J. Phys. & Colloid Chemistry 51,* 107-17 (Jan. 1947).

From sedimentation-velocity, diffusion, and viscosity measurements on very homogeneous samples of amylose triacetates it was found that the dimensions of the ellipsoids of revolution are compatible with the helical model of amylose which has been established for the solid amylose-iodine complex by x-ray methods. TTD: 3-47

Cellulose. Cellulose molecule. The Svedberg, Univ. of Upsala (Sweden). *J. Phys. & Colloid Chemistry 51,* 1-8 (Jan. 1947).

Ultracentrifugal sedimentation, diffusion, and osmotic balance are discussed and the apparatus described. Cures are given for the sedimentation of polysaccharides, unbleached linter cellulose, unbleached sulfate cellulose, native wood cellulose, and for cellulose nitrate in acetone solutions, and there are data on the diffusion of cellulose nitrate made from various sources of cellulose in acetone. The shape of the cellulose mols and the polydispersity of its solutions cause great experimental and theoretical difficulties. The technique must be pushed to perfection to give satisfactory data. TTD: 3-47

Cellulose acetate molecules. Viscosity-molecular weight relationship for cellulose acetate. W. T. Badgley & H. Mark. Polytechnic Inst. of Brooklyn. *J. Phys. & Colloid Chemistry 51,* 58-69 (Jan. 1947).

Experimental values for intrinsic viscosity and molecular weight (MW) for the cellulose acetate-acetone and the cellulose acetate-methyl cellosolve systems, over a wide MW range, show that the simple equations relating these 2 quantities are inadequate. An empirical equation is suggested which represents the data with an average deviation of 3% over the entire MW range. An attempt was made to relate these measurements to the work of Simha and Kraemer on the axial ratio of mols. Results indicate that, in the regions of lower MW the mol is rather rapidly extended; and as the MW increases it becomes more nearly spherical. TTD: 3-47

Diffusion in wood. Diffusion in wood. H. K. Burr & Alfred J. Stamm, USDA Forest Products Laboratory. *J. Phys. & Colloid Chemistry 51,* 240-61 (Jan. 1947).

Microscopic measurements were made of the number of fibers per cm in the radial and tangential directions, of the double cell wall thickeners, and of the fractional-pore volume of hardwoods show a wide variation in these quantities and indicate why the equations of Stamm, derived for the simpler softwoods, apply with less consistency to the hardwoods. Measurements of the rate of transfusion of water vapor through several varieties of wood are in fairly good agreement with theoretical values. Similar measurements on regenerated cellulose confirm the order of magnitude of the value for the effective fractional cross-section of the transient capillaries in the cell wall, estimated by Stamm. TTD: 3-47

Engineering cost. Investments and the engineer. R. A. Kinckiner, E. I. du Pont de Nemours & Co. *Chem. Eng. Progress 43,* 183-8 (Apr. 1947).

The magnitude of the increase in construction costs during recent years requires close analysis of these costs and of ways in which engineers can help reduce them. These ways include: (1) elimination of overdesign, (2) use of continuous processing, (3) use of control instruments, (4) proper materials of construction, and (5) development and use of most efficient types of equipment.
LCL TTD: 3-47

Hemicellulose. Molecular properties of hemicellulose fractions. Merrill A. Millett & Alfred J. Stamm, USDA Forest Products Laboratory. *J. Phys. & Colloid Chemistry 51,* 134-47 (Jan. 1947).

Aspen sawdust, extractive-free, was delignified by alternate chlorination and extraction with monoethanolamine. The holocellulose so obtained was separated into 4 main fractions: (1) a water-soluble fraction; (2) a fraction soluble in 1% NaOH solution; (3) a fraction soluble in 5% NaOH; and (4) a residue consisting mainly of alpha cellulose. The molecular properties of the first 3 fractions were determined by as many of the classical methods as could be applied. TTD: 3-47

Molecular weight determination. Molecular weight determination by light scattering. P. Debye. Cornell Univ. *J. Phys. & Colloid Chemistry 51,* 18-32 (Jan. 1947).

The effects of concentration on osmotic pressure and on light scattering are related to each other mathematically. In the application of the turbidity method for the determination of molecular wt., the difference between the index of refraction of the solution and that of the solvent is measured and the turbidity determined. The apparatus and technique are described. TTD: 3-47

Polymerization. Polymerization of olefins and diolefins in suspension and emulsion. W. P. Hohenstein & H. Mark, Polytechnic Inst. of Brooklyn. *J. Polymer Sci. 1,* 127-45, 549-80 (Mar., Dec., 1946).

A review of the literature from 1910-1945 is presented from the point of view of scientific information on the mechanism of polymerization under these conditions.
LWR TTD: 3-47